

AMENDMENTS TO THE DRAWINGS

The attached Replacement Drawing sheets for Figs. 8, 9, 11(a)-(b), 24, 31, 32, 35(a), 36, 40, 43(a), 44(a)-(b), 48(a), 49(a)-(b), 50, 52(a), 53(a), 54, 55, 59, 61, 62, 64, 69, 71, 73, 77, 78(a)-(b), 81(a)-(b), and 82 are submitted herewith to replace the original drawing sheets for Figs. 8, 9, 11(a)-(b), 24, 31, 32, 35(a), 36, 40, 43(a), 44(a)-(b), 48(a), 49(a)-(b), 50, 52(a), 53(a), 54, 55, 59, 61, 62, 64, 69, 71, 73, 77, 78(a)-(b), 81(a)-(b), and 82 as filed on June 25, 2004. The drawings have been amended solely to address formality concerns as raised in the Office Action, and as such, no new matter has been added through the drawing amendments.

REMARKS

The Office Action dated June 29, 2007 has been received and carefully noted. The above amendments to the specification, drawings, and claims, and the following remarks, are submitted as a full and complete response thereto.

Following the current amendment, claims 1, 4 and 9-11 are currently pending. Claims 2-3, 5-8, and 12-32 were previously withdrawn in response to a prior election requirement. Applicants herein amend claims 1, 4, 9, and 10 to more particularly point out and distinctly claim the subject matter of the invention. Furthermore, the Drawings and Specification are amended to place the present application in better condition for examination, as described in greater detail below. It is respectfully submitted that the current amendments add no new subject matter to the present application and serve only to place the present application in better condition for examination. Entry of the amendments and reconsideration of pending claims 1, 4, and 9-11, including independent claim 1, are respectfully requested.

Beginning at page 3, the Office Action objects to the drawings, and in response, Applicants herein include amended Figures 8, 9, 11(a)-(b), 24, 31, 32, 35(a), 36, 40, 43(a), 44(a)-(b), 48(a), 49(a)-(b), 50, 52(a), 53(a), 54, 55, 59, 61, 62, 64, 69, 71, 73, 77, 78(a)-(b), 81(a)-(b), and 82 to address each of the objections raised in the Office Action. Applicants further amend the specification as needed to effect the amendments to the drawings. As previously noted, Applicants believe that the amendments to the drawings add no new subject matter to the present application. In view of the amendments,

Applicants urge that the all grounds for objection to the drawings have been overcome, and the present application is in condition for examination. Reconsideration and allowance pending claims in view of the amendments to the drawings is respectfully requested.

Beginning at page 8, the Office Action raises numerous objections to the specification of the present application. In response, Applicants herein amend the specification as directed in the Office Action to address each of the raised objections. Again, Applicants believe that the amendments to the specification add no new subject matter to the present application and serve only to place the present application in better condition for examination. In view of the amendments, Applicants urge that the all grounds for objection to the drawings have been addressed, and the present application is now in condition for examination. Reconsideration and allowance of the pending claims in view of the amendments to the specification is respectfully requested.

Beginning at page 14, the Office Action rejects claims 1, 4, and 9-11 under 35 U.S.C. §112, second paragraph, for failing to particularly point out and distinctly claim the subject matter that the Applicants regards as the invention. More specifically, the Office Action identified the phrase "composed of" in claim 1 and "the linking groove" of claim 10. Applicants have made appropriate amendments to claims 1 and 10 to address the concerns raised in the Office Action. Likewise, corresponding amendment has been

made to claim 9. Thus, this rejection is respectfully moot in view of the claim amendments. Reconsideration and allowance of the claims is requested

In particular, Applicants herein amend claim 1 and claim 9 to replace the expression “composed of” with the well-defined patent phrase “comprised of.” Regarding claim 10, Applicants replace “the linking groove” with “the linking grooves” so that the limitation better conforms to the other recitations of claims 10. It is believed that these amendments address all grounds for rejection under 35 USC §112, Second Paragraph. Therefore, it is respectfully requested that this ground for rejection be withdrawn.

Beginning at page 15, the Office Action rejects claims 1 under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 3,962,838 of Cox (the “Cox” reference). According to the Office Action, Cox teaches every claimed recitation of claim 1. However, as will be discussed below, Cox does not disclose numerous recited elements of claim 1. Thus, this rejection is respectfully traversed and reconsideration is requested.

Independent claim 1, upon which claims 4 and 9-11 are dependent, recites a staircase that includes a pair of right and left stringers that includes truss structural members and treads. The truss structural members each include an upper chord member and a lower chord member having node members and which are inclined with the slope of the staircase. The truss structural members further include lattice members for linking

the upper chord member and the lower chord member using the node members. In this configuration, each tread is supported on the upper chord members by a support member that is laid horizontally at each riser height. Also, the support member is fixed to the upper chord members using a bolt through holes provided in the node members of the upper chord members.

As will be discussed below, Cox fails to disclose or suggest all of the elements of any of the presently pending claims, including claim 1.

According to its abstract, Cox provides:

A self-adjustable stair construction wherein the treads of the stair are supported by spacers between parallel upper and lower stringers in a truss assemblage. The rise and run and nosing are simultaneously adjusted for each tread with the adjustments being cumulative for each stair flight total run while maintaining the treads level. Each tread is located in a right angle relationship with each spacer. The treads, spacers and stringers are pivotally connected together with an elongated slot formed in each spacer to permit the adjusting movement. The slots are inclined and may be either curved or straight with the slope of either being in substantial alignment with the direction of the adjusting movement. The minimum number of repeated parts to produce the whole stair may be two.

In this way, Cox discloses a complex, accordion-type staircase in which the angle of the staircase may be adjusted as needed. For example, as depicted in Cox in Fig. 2 and as described at Col. 5, ll. 36-54:

Located on each side of the stair 20 is a pair of upper stringers 38 and lower stringers 40 which are identical to each other and are comprised of elongated flat rigid members, usually formed out of metal, and include a plurality of holes 42 formed therein equally spaced apart. The stringers 38 and 40 on both sides of the stair are positioned in a parallel relationship and spaced several inches apart.

Interconnecting each of the stringers 38 and 40 are a plurality of vertical tread spacers 44. The vertical tread spacers 44 are maintained substantially in a vertical relationship during the adjustment movement. Each of the vertical tread spacers 44 are formed in the shape of a flat, rigid link and include hole 46 adjacent to one end and an elongated straight slot 48 at the other end.

With this configuration, the installed angle of the stair 20 may be adjusting by sliding the stringers 38 and 40 along the slot 48, as depicted in FIGS. 6a and 6b.

From this description, it can be seen that Cox discloses an entirely different staircase configuration from that disclosed in the present application in the elected species at Figures 32-37 and the associated text. To better clarify these differences and to expedite examination and allowance of the present application, Applicants herein amend claim 1 to recite, for example, that the upper and lower chord members include node members and that the lattice members connect to the upper and lower chord members at the node members. Claim 1 further recites the limitations that each tread is supported on the upper chord members by a support member that is laid horizontally at each riser height and that the support member is fixed to the upper chord members using a bolt through holes provided in the node members of the upper chord members.

This recited embodiment of claim 1 enables relatively few pre-fabricated components to efficiently combine to construct a strong but economical staircase assembly that has a reduced likelihood of failure. In particular, as described in at paragraph 237 of the printed application, the staircase is composed of “of an upper chord member 1 and a lower chord member 2 which are inclined with the slope of the staircase;

and a plurality of lattice members 4 for linking them. The upper chord member 1 and the lower chord member 2 are each composed of a plurality of frame members 3 linked to each other via hubs 5.” In view of this disclosure, Applicants note that the recited structure, in comparison to the disclosure of Cox, is relatively simple and, unlike Cox, cannot provide adjustments to the angle of the staircase.

In comparison to the recited limitations of claim 1, Applicants urge that Cox fails to disclose that the upper and lower chord members include node members and that the lattice members connect to the upper and lower chord members at the node members. Instead, Cox includes bolts 54 that allow the structural members to rotate and adjust as needed to accomplish the purpose of allowing angular adjustment. The bolts would not receive and efficiently disperse forces as the node members recited in the present application.

Similarly, Applicants note that Cox does not teach or suggest the other recited limitations of amended claim 1 that (1) each tread is supported on the upper chord members by a support member that is laid horizontally at each riser height and (2) the support member is fixed to the upper chord members using a bolt through holes provided in the node members of the upper chord members. As depicted in FIG. 7, Cox discloses attaching the treads directly to the staircase at the bolts 54 to allow the desired angular adjustments. Therefore, there is no support member in Cox and, likewise, no support member that is connected to node members using bolts. As described in greater detail below, the Office Action concedes in the discussion of claim 4 that Cox does not disclose

linking members laid horizontally at each riser height. Likewise, the Office Action concedes in the discussion of claim 9 that Cox does not disclose the node members.

For at least these reasons, Applicants urge that Cox does not disclose numerous recited elements of claim 1. Thus, this rejection is respectfully traversed. Claims 4 and 9-11 should similarly be allowable as depending from allowable claim 1. In view of the present amendments and remarks, reconsideration and allowance of the pending claims is requested.

Beginning at page 15, the Office Action also rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over Cox in view of Japanese Published Patent Application No. JP04-179762 of Miyake et al. (the "Miyake" reference). According to the Office Action, Cox fails to disclose or suggest the limitation from claim 4 that structural members are linked to each other via a plurality of linking members which are laid horizontally at each riser height, and the treads are fixedly supported on the linking members, but that these Miyake teaches these limitations. However, as will be discussed below, Miyake fails to address the above-described limitations in Cox, so claim 4 should be allowed as depending from allowable independent claim 1. Thus, this rejection is respectfully traversed and reconsideration is requested.

According to its abstract, Miyake addresses the technical problem of "facilitating an assembly work at a site by a method wherein upper and lower horizontal pieces are arranged to upper and lower ends, respectively, of a riser, a side beam and a mounting

piece for fixing a bolt are located to both side edges of the horizontal piece, and a mounting hole for joining with a tread is formed in the horizontal piece.”

In particular, Mikaya discloses:

Upper and lower horizontal pieces 4 and 5 are located to the upper and lower ends, respectively, of a riser 1. Mounting pieces 6 each having a mounting hole are arranged to the two side edges of the two horizontal pieces 4 and 5. Mounting holes 4a and 5a are formed in the two horizontal pieces 4 and 5, respectively. Bolts 20 inserted in the mounting holes 4a and 5a are embedded in the under surface of a tread 2. Mounting holes 7 corresponding to the respective mounting pieces 6 are formed in a side beam 3. In an assembly procedure, a bolt 12 is first inserted in the mounting hole 6a of the riser 1 and the mounting hole 7 of the side beam 3 and joined. The tread 2 is placed on the upper and lower horizontal pieces 4 and 5 of each riser 1, and embedding bolt 20 is inserted in the mounting holes 4a and 5a for joining. This constitution facilitates an assembly work and eliminates a weld work needing a skill.

In view of this disclosure, it can be seen that Miyake provides a riser 1 that includes integral upper and lower horizontal pieces 4 and 5 that combine to provide a mounting surface for the tread 2.

Applicants respectfully note that Miyake does not address the above-described deficiencies in Cox, and therefore claim 1 is allowable over the combination of Cox and Miyake. In particular, Applicants note that Miyake obviously does not disclose that either the recited node members or that the support member is fixed to the upper cord member using a bolt in a hole in the node member. The utility of the node members is described above. Similarly, the recited limitation of the support member being fixed to the upper cord member using a bolt in a hole in the node member discloses a staircase

structure in which a single bolt connects a support element to the truss structural member via the node member. In contrast, Miyake teaches that first bolts 20 connect the tread 2 to the horizontal members 4, 5, and second bolts 12 join the riser 1 to the side beam 3.

For at least these reasons, the combination of Cox and Miyake fails to teach each and every limitation of any of the claims. This rejection is respectfully traversed. Reconsideration and allowance of the claims is respectfully requested.

Beginning at page 18, the Office Action also rejected claims 9-11 under 35 U.S.C. §103(a) as being unpatentable over Cox in view of Japanese Published Patent Application No. JP00-352122 of Kawamura et al. (the “Kawamura” reference). According to the Office Action, Cox fails to disclose or suggest the limitations from claim 9 of that the truss structural members are each composed of node members each disposed at a node point; and frame members for linking adjacent node members, but that Kawamura teaches these limitations. However, as will be discussed below, Kawamura fails to address the above-described limitations in Cox, so claims 9-11 should be allowed as depending from allowable independent claim 1. Thus, this rejection is respectfully traversed and reconsideration is requested.

According to its abstract, Kawamura addresses the technical problem of “providing frame member for framework structure capable of facilitating the work formation of the connected ends by crushing action, developing no irregular crack therein and making it light.” In particular, Kawamura discloses:

A frame member 20 for constructing a framework structure is constituted of a pipe material 20A with the thick central part, and both end parts is constituted of thin pipe materials 20B and 20C. It is formed in the thin pipe materials 20B and 20C by crushing the connected ends 10 and taper sections 11 fitted to a connecting groove of a columnar hub. Such frame member 20 is manufactured by forming the end of a thick pipe material T into the thin by cutting work, and by a different manufacture, pipe materials having two different thicknesses can be connected with adhesive, welding, friction press-contact or friction stirring connection to manufacture.

According to the Office Action at page 17, Kawamura at FIG. 8 further discloses a node member 8 that connects a plurality of frame members 7.

As an initial observation, Applicants urge that there is no motivation to combine Cox and Kawamura, as required under MPEP §2143.01. For example, there is no suggestion in Cox of adapting the disclosed staircase for other construction techniques. Likewise, there is no suggestion in Kawamura to use the disclosed structural framing system in staircases. Furthermore, Applicants find Cox and Kawamura to be incompatible since in Cox discloses an adjustable staircase system, while Kawamura relates to an immovable building construction technique. There is simply no easy way to combine Cox and Kawamura without undue experimentation. Furthermore, there is no evidence to suggest that the trend in the field of the art is to apply the construction method of Kawamura.

Even if Cox and Kawamura may be rightfully combined, Applicants note that the combination of Kawamura and Cox does not disclose or suggest every recitation of any of the claims 1, 4, and 9-11. In particular, Applicants respectfully urge that Kawamura

does not address the above-described deficiencies in Cox, and therefore claim 1 is allowable over the combination of Cox and Kawamura. Claims 4 and 9-11 would likewise be allowable as depending from claim 1 that is allowable over the combination of Cox and Kawamura.

In comparison to the recited limitations of claim 1, Applicants urge that Kawamura fails to disclose a staircase that includes upper and lower chord members with node members and that lattice members connect to the upper and lower chord members at the node members. While Kawamura at FIG. 7 depicts a curved barrel vault mold soil structure formed by a hub 8 connecting frame members 7, there is no teaching or suggestion in Kawamura to use this structure in a staircase. Furthermore, even if the disclosed structure of Kawamura was used to form a staircase, there is no teaching or suggestion to form the recited structure in which upper and lower chord members have node members and in which lattice members connect to the upper and lower chord members at the node member. For example, the Kawamura could be used to produce a structure in which the nodes are positioned in a center location in the lattice members.

Moreover, Applicants note that Kawamura does not teach or suggest the other recited limitations of claim 1 that (1) each tread is supported on the upper chord members by a support member that is laid horizontally at each riser height and (2) the support member is fixed to the upper chord members using a bolt through holes provided in the node members of the upper chord members. There is simply no discussion in Kawamura of a support member or other related structure. Likewise, there is no suggestion in

Kawamura of fixing a support member to the upper chord members using a bolt through holes provided in the node members of the upper chord members. While, Kawamura at FIG. 8 teaches a hub 8 having a bolt 16, there is no teaching or suggestion in Kawamura to connect the recited support member to the upper chord at the node member.

For at least these reasons, the combination of Cox and Kawamura fails to teach each and every limitation of any of the claims, including claims 9-11 that are specifically raised in this rejection. This rejection is respectfully traversed. Reconsideration and allowance of the claims is respectfully requested.

As discussed above, each of the claims 1, 4, and 9-11 recites subject matter which is neither disclosed nor suggested in the cited prior art. Applicants submit that the recited subject matter is more than sufficient to render the invention non-obvious to a person of ordinary skill in the art. It is respectfully requested that independent claim 1 and the related dependent claims be allowed in view of the above arguments, comments and remarks and that the present application be allowed to pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

A handwritten signature in black ink, consisting of a large loop followed by a series of smaller, connected strokes that end in a sharp upward flick.

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Enclosures: Replacement Drawings (29 Sheets - Figs. 8, 9, 11(a)-(b), 24, 31, 32, 35(a), 36, 40, 43(a), 44(a)-(b), 48(a), 49(a)-(b), 50, 52(a), 53(a), 54, 55, 59, 61, 62, 64, 69, 71, 73, 77, 78(a)-(b), 81(a)-(b), and 82)